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Preventive Measures in the Appalachian Mountains.

In order to combat trachoma in the Appalachian Mountains, therefore, steps were taken to put these principles into effect. One hospital each was established at Hindman, Ky., September 4, 1913, Hyden, Ky., September 24, 1913, and Jackson, Ky., March 24, 1914, and one is being established at Coeburn, Va., a fifth to be opened later in the mountains of West Virginia. These hospitals are located in converted dwelling houses, and are purposely inexpensive as to equipment and maintenance in order to demonstrate that such institutions can be operated annually for a sum any county should be able to raise. The total cost is about $7,000 for each hospital annually. At least two counties have already undertaken to carry on such work.

Since their opening, the three Government hospitals in Kentucky have been available to the population of an area covering more than 10,000 square miles. In the 17 months that they have been open, i. e., to May 1, 1915, a total of 1,437 cases of trachoma have been treated. These patients have been given a total of 18,860 treatments, and 1,823 operations were performed, many of them under general anesthesia. As a result, a fair proportion of cases have already been cured and over a thousand foci of infection prevented.

In order to give instruction regarding the prevention of trachoma, educational bulletins have been sent to 12,079 households in the counties operated in. A total of 120 public-health lectures have been presented before audiences in the mountains and other infected counties, and visits for purposes of instruction were made to 677 mountain homes.

By such means may the trachoma problem be met in infected communities. In any event, however, the process of elimination of the disease will be prolonged—probably for years—but antitrachoma work will be beneficent in preventing other diseases, and eventually trachoma itself must yield to thorough scientific methods.

PUBLIC HEALTH ADMINISTRATION IN CHICAGO, ILL.

A STUDY OF THE ORGANIZATION AND ADMINISTRATION OF THE CITY HEALTH DEPARTMENT.[1]

By J. C. Perry, Senior Surgeon, United States Public Health Service.

At the request of the commissioner of health, the efficiency division of the Chicago civil-service commission recently commenced a critical study of the city's health department. Before much progress had been made, however, the desirability of having the assistance of one familiar with the more or less technical work of a health department became apparent, and consequently a request for assistance was made to the United States Public Health Service. The work of the writer, who was detailed to assist the commission, has extended over a period of four months, and has embraced not only a general study of the various functions of the health department, but also a critical examination of the duties performed by the several bureaus from an efficiency standpoint.

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[1] This study was conducted during the period from December, 1914, to April, 1915.

Health matters in Chicago are administered by a department of health, which is well organized and free from political influence in its general administration. The bureau chiefs and other persons employed in the department are civil-service employees, the only exception being the commissioner, who, with the advice and consent of the city council, is appointed by the mayor for a term of four years.

The department, for the purpose of effective administration and the satisfactory performance of the various functions falling within its province, is subdivided into the following bureaus:

Commissioner's office.
Bureau of medical inspection.
Bureau of hospitals, baths, and lodging houses.
Bureau of sanitary inspection.
Bureau of vital statistics.
Laboratory bureau.
Bureau of food inspection.

The city has been divided into the following districts in order to facilitate administration:

School districts	105
Medical inspection districts	50
Quarantine officer districts	25
Supervising medical inspectors' districts	8
Food inspection districts	17
City milk inspection districts	12
Restaurant inspection districts	5
Bakery inspection districts	6
Plumbing inspection districts	23
Work shop inspection districts	17
Ventilation inspection districts	5
Complaint districts	14

THE COMMISSIONER'S OFFICE.

Commissioner of Health.

Ordinances relating to duties.—The commissioner of health, who is the responsible head of the department and reports only to the mayor, is given wide latitude in the conduct of his department and ample authority in the enforcement of the ordinances governing health matters. A summary of the provisions of the general ordinances will make the duties of the commissioner easily understood:

The establishment of an executive department known as the department of health.

The provision for a commissioner of health, who is head of the department. He must be a physician duly licensed to practice medicine, and is appointed by the mayor with the advice and consent of the city council.

He exercises a general supervision over the sanitary condition of the city, and all orders from the health department are issued in his name.

The commissioner appoints an assistant commissioner, a secretary, heads of the different bureaus, and necessary employees, who perform the duties provided by State law and city ordinances and other duties the commissioner may require.

It is the commissioner's duty to enforce the laws, ordinances, and regulations of the department of health relating to the sanitary condition of the city.

The commissioner, at all times, is permitted to enter any house, store, etc., to determine its sanitary condition.

He gives professional advice and information to the mayor and city council relative to public health matters, investigates outbreaks of contagious or epidemic diseases, and also adopts measures to arrest the progress of these diseases.

He has charge of the city isolation hospital, and has the power to make such regulations for the prevention and suppression of disease as he may deem necessary.

The commissioner of health makes an annual report to the city council, giving a statement of the work performed by his department during the preceding year, together with any other information regarding his department he deems proper. He also has the authority to publish from time to time statistics and information concerning the work of his department or relating to the health of the community and methods of preventing or curing diseases.

The duties of the commissioner are thus twofold in character: (*a*) those relating to the administration of the health department, and (*b*) those pertaining to the activities of other commissions through an ''interlocking directorate.''

Membership in health organizations.—The present commissioner is secretary of the Municipal Tuberculosis Sanitarium Board and has been intimately connected with the construction and equipment of the sanatorium, as well as with the general campaign against tuberculosis in the city of Chicago; another cooperative position filled by him is that of member of the board of directors of the Infant Welfare Society. He is chairman of the board of examiners of plumbers acting under authority conferred by a State law. He is also chairman of the technical board, division of wastes, which is engaged in studying the problems of city waste disposal, and under the authority of an ordinance has control of the operation of the municipal plant for reduction of garbage.

The commissioner is president of the morals' commission and as such is connected with investigations concerning public morals, the regulation of dance halls, etc. He is president of the Chicago ventilation commission, a semiofficial body made up of representatives of the health department, board of education, and members of technical societies. He is also president of the Lake Michigan water commission, composed of representatives of the States of Illinois, Indiana, Wisconsin, and Michigan and of the cities of Chicago, Milwaukee, and Grand Rapids. This commission studies all matters concerning water supplies from the Lake to the different States and cities and considers the disposal of sewage in relation to this water supply. The commissioner is also member of the advisory board of Cook County Hospital and the Elizabeth McCormick foundation.

This membership on the boards of various allied activities has placed the commissioner of health in intimate touch with the work of other health-conserving agencies, official and private, and enables him more efficiently to promote the public health of the community.

Assistant Commissioner of Health.

The assistant commissioner is a civil-service employee and receives a salary of $4,500 per annum.

His duties as defined by ordinance are that he shall see that a record is kept of the department's work and that during the absence of the commissioner, or when directed by the mayor, he shall perform the duties of the commissioner.

In addition general administrative duties have been assigned him by the commissioner. He has general supervision of the employees of the department, grants regular leaves of absence, and passes on the sick leave of the employees; audits and checks all requisitions emanating from the different bureaus; authorizes payment of vouchers for supplies; makes contracts; signs the pay rolls of the department; has control and supervision of the property and the proper accounting therefor by the chiefs of the different bureaus. He also keeps the efficiency records of the employees of the department and lectures on subjects pertaining to public health in the school of instruction recently established in the department and before audiences at schools and various societies.

Secretary.

This official of the health department is engaged in propaganda to educate the public in the ordinary measures to be taken to conserve the health of the community. His duties consist of editing the weekly bulletin of the department, preparing press matter on health subjects for the daily newspapers, and issuing and distributing bulletins, pamphlets, leaflets, etc., for the purpose of disseminating information on subjects pertaining to health.

Educational and Publicity Work.

Particular stress is laid on educational work in fostering improvement in living conditions and the enlightenment of the public in matters of sanitation. Lectures, illustrated with lantern slides and moving-picture films, are given at frequent intervals by the commissioner, the assistant commissioner, the secretary, and the different heads of bureaus. These lectures embrace various phases of sanitary work and hygiene, including correct methods of living and the precautions to be taken to preserve health. In addition, special exhibits are prepared illustrating improved housing conditions and the hygienic necessity for the protection of milk and food supplies, and exemplifying the work of the department in its efforts to protect the public health.

These exhibits are shown in the public-school buildings and are open to the public. They are moved from school to school, and by this rotation are made accessible to the people in different sections of the city.

School of Sanitary Instruction.

The school of sanitary instruction, organized in 1907, was considerably expanded in scope in the course of instruction commencing January 1, 1915. Two courses are given a year, one beginning in January and one in July.

All probationary employees of the health department are required to take the course in such general subjects as department rules and orders; functions and relations of the department of health; the important ordinances in the sanitary code and such violations as should be reported by all field employees; method of reporting violations and of collecting and reporting evidence; and the manner of transmission and the means of control of the communicable diseases.

These employees must also take courses especially applicable to the work of the bureau in which they are engaged. The courses embrace preliminary instruction in field work and office methods and practical demonstration by the supervisors as to the proper manner of "carrying out" any special work, such as collecting chemical and bacteriological samples, basis to be used in scoring various establishments, proper methods of isolation, disinfection of premises, etc.

Employees may take any of the special courses in addition to those pertaining to the work of their own bureau or division, and on passing a satisfactory examination will be granted a certificate setting forth their qualifications.

Courses are also given in public-health work to limited groups of undergraduates of medicine, nurses, and social-welfare workers. Instruction is given in the following subjects:

(*a*) Control of communicable diseases, including methods of reporting, inspection, and disinfection.

(*b*) Medical inspection of school children, including practical field work, inspection for contagious diseases, physical defects, etc.

(*c*) Field nursing, including duties in assisting health officer in inspection, care of skin diseases, and minor surgical ailments in school children; general duties in visiting homes and the instruction of parents in proper home care and treatment of physically disabled children.

(*d*) Nursing of contagious diseases, diphtheria, scarlet fever, etc.

(*e*) Instruction in practical laboratory methods in the examination of milk and water, and in making clinical diagnoses.

(*f*) Inspection of food, including field work in meat inspection, inspection of milk depots and pasteurizing plants, and the collection of chemical and bacteriological samples.

(*g*) Sanitary building inspections, including office and field work in examination of plans, plumbing, ventilation, etc.

(*h*) Instruction in the collection and tabulation of mortality data.

Other subjects taught are: Administration, operation, and construction of municipal lodging and public bath houses; general principles of waste disposal, and the operation of garbage-reduction plants.

Courses of instruction are also given to milk-plant operators, and lectures and exhibits to the public in a general educational campaign for the improvement of sanitary conditions and for the preservation of health.

Office Secretary.

This employee is in reality the business manager of the office and has charge of the proper preparation of requisitions, vouchers, and pay rolls for the signature of the assistant commissioner. He checks the pay rolls, keeps records of contracts, supplies received and issued, and property accountability of the chiefs of bureaus. He has control of the clerks in the office and supervises and directs their work. In order more correctly to present the work of this office the various activities will be considered under appropriate headings.

Requisitions.—They originate in the bureau requiring the supplies and are transmitted in duplicate to the assistant commissioner, who examines them and makes such changes in items and quantities as he deems advisable. After this audit, the requisition is prepared in duplicate and after approval one copy is sent to the general supply clerk, and the other to the bureau making the requisition, so that it will have information of any items or quantities disallowed.

Purchase of supplies.—The city supply clerk may have requisitions filled and purchase supplies in amounts not exceeding $500. Regular supplies in excess of this amount must be secured under contracts made under competitive bids. The commissioner of health is authorized to purchase such supplies as vaccines and antitoxins in an amount not to exceed $250 in value.

All supplies furnished by dealers and contractors are carefully checked upon receipt, and if questions of standard arise laboratory examinations are made and payment for the supplies is withheld until they have been proven satisfactory. The clerk in the bureau where the requisition originated certifies on a duplicate copy of the bill that the articles have been received.

Time record.—Work performed for the department of health by another division, contractor, or day laborer is carefully checked as to the actual time of the persons engaged. An employee of the health department, on a specially prepared blank, checks the actual number of hours worked each day. When the work is completed this sheet is sent to the contractor or other person interested, with a statement that if no claim is made for correction in five days the account will stand as shown. This check results in a saving to the department by obviating claims for work not rendered.

Pay rolls.—The procedure followed is a pay roll for each bureau. Formerly there was one general pay roll for the whole department, but as an error in any part of it held up the entire payment there were annoying delays. Under the present plan only the bureau the pay roll of which is in error is affected.

The pay rolls are checked by the office secretary against leaves of absence, and from the files in the assistant commissioner's office they are checked according to rating in order to determine that the amounts claimed are correct. The pay rolls are then signed by the assistant commissioner in duplicate. One copy is sent to the civil service commission and the other to the comptroller for audit, and the paymaster pays in individual checks coming to the department for this purpose. Payments for salary are made twice a month.

Property.—The different bureau chiefs are held responsible for the property in their custody and are required to render quarterly property returns. The records kept of property received and issued could be simplified to advantage, and there is not a proper examination and check of the property returns rendered.

I believe the detail of a competent property clerk in the commissioner's office would be advisable. Such an employee could examine all property returns for correctness and make inventories of the property in the various bureaus. He should also be in charge of the requisitions for supplies, check the receipt of such supplies, and keep a record of the articles issued to the different bureaus.

Files.—The central file of the entire department is kept in this office. This was found adequate and up to date.

Suits.—A clerk in the office has charge of all suits instituted for violation of ordinances. Two copies are made of suit cards prepared by the different bureaus, the original is given an office number and sent to the assistant prosecuting attorney for necessary action and the duplicate is placed in a special file. When cases are set for trial the list by number and date of trial is sent to the commissioner's office, and the clerk arranges the cards in his file according to the date, so that he can easily keep in touch with the proceedings. He also investigates and prepares the evidence in cases of violations occurring in the work of the bureau of medical inspection.

When the trial has been concluded this clerk makes a summary of the disposition of the cases, giving the cause of dismissal or tabulating the fines imposed. Thus a complete record of results is available.

Although the process of carrying a suit to termination is still a slow procedure by persistent effort the department has effected considerable improvement. At the beginning of 1912 the average time that elapsed between the date of filing the suit and its final disposition, either by fine or dismissal, was 212 days. So much time was consumed that a reorganization of department methods was instituted, and in 1913 the average time was reduced to 112 days. In 1914, as a result of further improvements in the methods of suit procedure, the time was reduced to 91 days. Taking into consideration the large number of suits instituted by the health department, it is apparent that the proper remedy to apply in securing more satisfactory legal service would be to detail an assistant prosecuting attorney for the specific purpose of handling such suits. This would result in the desirable moral effect of a more prompt disposal of the cases.

Leaves of absence.—Under the regulations an employee is annually entitled to 14 days regular leave of absence and 15 days sick leave, with pay. He can, however, utilize the regular leave as sick leave, making the total 29 days, if the exigency arises from prolonged illness. If an employee is absent only three days or less on account of sickness, no certificate is required, and he only has to report by telephone each morning that he is unable to perform duty on account of illness. If his sickness exceeds three days, a physician's certificate must be presented covering the period of his illness.

It can be readily seen that in cases of three days' illness, there are opportunities for fraud, as no check is made in the majority of instances to determine whether the employee is actually ill or not. The bureau chief makes such a report on white paper to the assistant commissioner. An examination of the files showed that such reports of illness exceeded those accompanied with a physician's certificate in the proportion of 8 to 1. The forms used are prescribed, that of the physician's certificate being on yellow paper. Different colors are used to simplify office procedure. Many of the physician's certificates are faulty in that they do not specify that the employee has been seen each day covered by the certificate, and bear evidence that the information concerning the length of sickness is often secured from the employees themselves. As the number of employees reporting sick at one time is not large, a more satisfactory procedure would be the detailing of a physician of the health department to visit such employees.

A card index is kept of employees reporting sick, so that the time lost may be checked against the leave authorized, and no payment made in excess of what is due. Injuries to employees by accident is immediately reported by the bureau chief, who gives the date, nature of the accident, and probable length of time the employee will be incapacitated.

Efficiency report.—New employees are probationary for a period of six months, and the bureau chief is required to rate them each month on a special blank for this purpose; the report must show general attendance, attention to rules and regulations, promptness, speed, diligence, exactness, sobriety, truthfulness, and faithfulness; also general or special ability for the position, general health, and days absent on account of sickness. During this period of probation the employee must take the prescribed course in the school of sanitary instruction and pass a satisfactory examination on the subjects taught. He must attain an efficiency record of 80 per cent to be deemed satisfactory for permanent employment.

If unsatisfactory, he can be dismissed, but once given a permanent appointment, he can not be removed except for cause.

Bureau chiefs are required to submit a monthly report on the general efficiency of each employee in their division; the report is on a prescribed form and the rating of an employee takes into consideration his general efficiency in his particular branch of work, aptitude, attention to duty, tact, etc.

A card index file of employees is kept in the assistant commissioner's office. A rating of 80 per cent is required for continuance in the position.

The commissioner's office is well organized and the work is systematized.

Library.

There is a working library in connection with the commissioner's office. It contains about 1,000 volumes and 40 current periodicals on medical and sanitary subjects. The books and journals are for the use of all employees interested in special subjects or lines of work. Employees can take out books by signing a receipt, and from these charge cards are made out holding the signer responsible for the books' value. Journals can be taken out by bureau heads and other persons located in the building. Proper charge cards are made in such instances.

Monthly meetings.—There is a monthly meeting of the chiefs of bureaus with the commissioner and assistant commissioner for the purpose of discussing important articles in current literature on the various subjects in which the department is interested. Abstracts made of such articles by the heads of bureaus are read at these meetings.

FINANCIAL STATEMENT.

Appropriations 1914.

Commissioner's office, salaries			$32,620.00
Bureau of medical inspection, salaries			321,940.00
Bureau of hospitals, baths, and lodging houses:			
Administrative salaries		$8,340.00	
Contagious disease hospital—			
Salaries	$45,442.00		
Repairs and improvements	2,400.00		
		47,842.00	
Isolation hospital		6,820.00	
Iroquios Memorial Hospital		6,540.00	
Municipal lodging houses, salaries (includes supplies, repairs, $2,000)		15,460.00	
Public baths		36,256.00	
			121,258.00
Bureau of vital statistics			23,155.00
Bureau of food inspection			134,460.00
Bureau of sanitary inspection			158,564.00
Laboratory			34,155.00
Supplies, etc			170,850.00
Total health department proper			997,002.00
Board of examiners, plumbers, salaries			8,592.00
Waste disposal:			
Grace Street plant, wages, supplies, etc		$43,000.00	
Reduction plant, Thirty-ninth Street—			
Purchase	$350,000.00		
Repairs	185,000.00		
Operation and maintenance	276,142.50		
		811,142.50	
Three additional plants, purchase of sites and construction		200,000.00	
			1,054,142.50
Total			2,059,736.50

FOR CONSTRUCTION.

[Payable from proceeds of health department building bonds.]

	1914	1915
Sixteenth ward bath	$4,788.98	$15.25
Mayor bath	9,511.16	3,419.96
Nineteenth ward bath and equipment	20,000.00	50,000.00
Fifteenth ward bath	17,500.00	40,000.00
Fifth ward bath, contract liability	23,250.97	6,724.62
Contagious disease hospital	292,724.84	561,353.86
Twelfth ward bath		35,000.00
Bath at South Chicago		35,000.00
Municipal lodging house		123,923.85
Total	367,775.95	855,437.54

Appropriations, 1915.

Commissioner's office, salaries			$50,920.00
Bureau of medical inspection, salaries			341,440.00
Bureau of hospitals, baths, and lodging houses:			
Administrative salaries		$9,060.00	
Contagious-disease hospitals, salaries		44,724.00	
Isolation hospital		6,920.00	
Iroquois Memorial Hospital		7,480.00	
Municipal lodging houses:			
Salaries	$9,080.00		
Expenses	22,400.00		
		31,480.00	
Public baths		37,576.00	
			137,240.00
Bureau of vital statistics			24,220.00
Bureau of food inspection			140,340.00
Bureau of sanitary inspection			164,864.00
Laboratory			39,360.00
Supplies, etc			160,300.00
Total, health department proper			1,058,684.00
Morals commission, salaries and expenses			8,680.00
Waste disposal:			
Administrative salaries	$14,850.00		
Technical board, expense	10,000.00		
		$24,850.00	
Reduction plant—			
Salaries	218,970.00		
Supplies, etc	120,200.00		
Completing reconstruction and equipment [1]	385,500.00		
Equipment for transportation and disposal [2]	70,500.00		
		795,170.00	
Incinerator, Ninety-fifth Street—			
Salaries	32,754.67		
Supplies	10,200.00		
Completing construction and equipment [2]	170,000.00		
Unpaid bills	8,455.17		
		221,409.84	
Goose Island incinerator, construction [2]		75,000.00	
Bridewell incinerator, repairs, unpaid bills		5,606.25	
			1,122,036.09
			2,189,400.09
Less amount to be reimbursed from bonds			700,000.00
Total			1,489,400.09

BUREAU OF MEDICAL INSPECTION.

The duties embraced under this bureau are probably the most important performed by a municipal health department. The prime function of boards of health is to control communicable diseases, suppress epidemics, and prevent the spread of infection. Work of this character brings the health department in intimate contact with the public, and its efficiency is weighed by the skill and promptness exercised in combating such diseases.

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[1] $384,500, contingent on passing of bond issue.

[2] Contingent on passing of bond issue.

This bureau is the largest in the department, both in personnel and in amount of expenditure. As the character of its work requires covering the entire city daily, a large number of employees are needed.

Organization.—In order to effect proper division of work and to facilitate administration, three divisions have been created in the bureau, viz, division of contagious diseases, clerical division, and division of child hygiene. The bureau is under the direction of a bureau chief, the clerical division under a chief clerk, and the other two divisions are in charge of assistant bureau chiefs.

Briefly abstracted, the provisions of the ordinances covering this bureau, especially those which relate to the notification and control of communicable diseases, are given below:

The commissioner of health must see that persons reported as sick with contagious or epidemic diseases are examined and removed to the proper hospital, and also that suitable nurses and medical attendants are provided.

The commissioner must also see that a strict quarantine is observed in the case of these diseases by isolating the sick person and by posting a notice on the house. A fine is provided for removing this notice.

Every physician attending a person sick of any of the following diseases must report the fact to the commissioner of health inside of 24 hours: Cholera, yellow fever, scarlet fever, diphtheria, smallpox, typhus fever, typhoid fever, membranous croup, measles, whooping cough, mumps, German measles, infantile paralysis, cerebrospinal meningitis, streptococcic sore throat, pneumonia, tuberculosis, erysipelas, ophthalmia neonatorum, rabies, and puerperal septicemia.

Every physician, midwife, or nurse attending a child at birth or during the first week is directed to report to the commissioner within 24 hours any case of sore eyes, developed by the child.

Every veterinarian or any one else discovering a dog or other animal suffering with rabies must report that fact immediately to the commissioner, with the location of the dog and his license number, when known.

Anyone having knowledge of a person suffering from a contagious disease must report the case to the commissioner. The ordinance is directed in particular at managers of public or private institutions, hotels, and boarding and lodging houses.

No person in the city is allowed to move a person sick with a contagious disease without a permit from the commissioner, nor indeed can a person suffering from a mental disease or drug addiction be moved except by a person with the proper city, county, or State authority.

Household goods exposed to a contagious disease can not be moved or exposed until disinfected.

A supply of antitoxin must be kept on hand by the commissioner for treating dependent and deserving persons without charge.

The commissioner or authorized health officer has the power to enter any lodging house, boarding house, factory, workshop, or schoolhouse for the purpose of vaccination when the commissioner thinks smallpox is epidemic, or where the occupants have actually been exposed to infection.

The commissioner is directed to keep on hand sufficient vaccine lymph to vaccinate all persons who apply to him.

He also has the power to cause any house to be disinfected when occupied by a person suffering with a contagious disease. He may also close the house to visitors.

Division of Contagious Diseases.

In order to insure prompt investigation of communicable diseases, including inspection of individual cases and institution of proper quarantine, the city has been divided into 50 health officers' districts, 8 supervising medical inspectors' districts, and 25 quarantine officers' districts. The duties of the several employees in charge of these districts are clearly set forth in the handbook of the department, containing rules and regulations governing the various phases of field work in the bureau of medical inspection.

HEALTH OFFICERS.

The total number of health officers employed in this division is 55, one in charge of each district and five additional for assignments or emergency work. They are part-time men, but are required to work three hours a day, or as assigned. They must keep in touch with the department and are subject to call at any hour of the day to perform emergency work. A health officer has charge of all communicable diseases in his district and is responsible for a proper supervision of them.

The general duties performed are twofold: The inspection of cases of communicable diseases reported by physicians and the investigation of suspects, persons supposed to be suffering with such diseases, reported by others on the one hand; and the instituting of quarantine on the other. The latter embraces the proper isolation of the patient with attendant, instruction of the family and attendant as regards the necessary precautions to be taken to prevent spread of infection, and the proper disinfection and disposal of discharges or excretions from the patient. The health officer must investigate all suspected cases of infectious diseases occurring in his district and take the necessary measures to prevent spread of infection. He leaves a card of instruction for the quarantine officer, giving the class of quarantine imposed. He also notifies the principals of schools and Sunday schools of the children that should be excluded, sends notice to the milkman, and when the disease is diphtheria, scarlet fever, typhoid fever, infantile paralysis, or streptococcic sore throat posts cards of warning. These cards are posted by the health officer on the door in a conspicuous place to warn persons of the presence of a communicable disease on the premises. Such notices are posted when the case is one of the following diseases: Diphtheria, scarlet fever, measles, whooping cough, and acute anterior poliomyelitis.

QUARANTINE REGULATIONS.

Smallpox patients must be sent to the isolation hospital, and cases of diphtheria and scarlet fever that can not be isolated at home must also, if possible, be sent to the hospitals provided for them.

Believing the proper procedure to be that of quarantining the "public out" and the "patient in," the health department in 1914 inaugurated three classes of quarantine, designated as A, B, and C:

A. Isolation with trained attendant.—When it is possible satisfactorily to isolate the patient and attendants in one or more rooms, supply food and other necessities to the patient and attendants without its being necessary for the latter to leave the rooms set aside, and no dishes or other articles are permitted to leave these rooms until they have been disinfected, the other members of the family may be permitted to come and go without restraint. In the case of diphtheria, however, cultures from the noses and throats of these members must be negative. Furthermore, children in an apartment or dwelling where the patient is quarantined will not be permitted to attend school, Sunday school, and other places of assembly, or to use public conveyances. School teachers and persons handling milk must not engage in these occupations until the case on the premises where they live is terminated; but if they show a negative culture when the disease isolated is diphtheria, and change their domicile, the prohibition will not be enforced.

The rooms set aside for the isolation of the patient and attendant must be placarded: "For patient and attendant only." The attendant must thoroughly wash her face and hands and remove her outer clothing before leaving the patient's quarters.

In cases quarantined in this manner the attendants may be allowed to leave the house for an hour each day; but in the case of diphtheria cultures from their throats, taken every four days, must be negative. The attendants must thoroughly wash their faces and hands and change their outer clothing before leaving, and they must not visit places of assembly, enter stores, nor use public conveyances.

B. Isolation with member of household or other person as attendant—not trained.—Where the conditions, financial or otherwise, render it impossible to provide specially trained attendants, a member of the household is designated as attendant and is quarantined with the patient in a room or rooms set aside for this purpose. The attendant must observe all the rules and comply with all the isolation requirements specified under class A quarantine. When the prescribed rules are observed, other members of the household may be permitted to go and come as prescribed under rule A if, in diphtheria, cultures from the nose and throat are negative. The attendant must not leave the premises without special permission of the health department and then only after the requirements prescribed for attendants under class A have been fully carried out.

C. Impossible to isolate.—When it is impossible to set aside a room or rooms for the exclusive use of the patient, hospitalization is required to be enforced in so far as possible. In event this can not be carried out, persons living where there is a case of communicable disease will not be allowed to go in and out of the house. They must either remain in the house, or room and board away until the case has been terminated. However, in event a room can be sealed off so that there will be no contact with other members of the family, the wage earners can be allowed to room at home and take their meals elsewhere.

After instituting quarantine the health officer gives to the attendant isolated with the patient, or to a responsible member of the family in event isolation is not possible, a circular of instruction on the disease quarantined. This embodies information as to the proper disinfection and disposal of excretions from the patient and articles used by the sick or kept in the room, and the necessary precautions to be taken to prevent spread of infection. He also carefully instructs the attendant, especially in class B quarantine, or in class C the member of the family caring for the patient, as to the proper method of minimizing the danger of the spread of the disease.

On reporting an inspection that falls in class C quarantine, the health officers are required to make a very full report to the bureau, so that if hospitalization is impossible the existing conditions can be understood and the nature of the restraint determined. They must also secure accurate data as to milkmen and the milk supply of the family in all cases of diphtheria, scarlet fever, smallpox, and typhoid fever; and inquiry must be made as to what school the patient was attending.

QUARANTINE OFFICERS.

In order to carry out a systematic and adequate surveillance of cases under quarantine, the city has been divided into 25 quarantine officers' districts, with an officer in each.

The duty of these employees is to follow up and keep under supervision all cases where quarantine has been instituted by the health officer. In class A only the initial visit need be made, but in the other classes of quarantine visits are to be made daily if possible, or at such frequent intervals as duties will permit. On each visit inquiry is made of the care exercised in disinfecting and disposing of excretions from the patient and the method of disinfecting articles used by him. The necessity of keeping the rooms clean by scrubbing with hot water and soap, and properly airing and sunning them, are emphasized and insisted upon.

The other special duty of the quarantine officer is to perform terminal disinfections as required. In disinfection, special stress is laid on thoroughly washing the floor, woodwork, and similar surfaces with hot water and soap, on boiling fabrics that will not be injured, and on aeration and exposure to sunlight. Gaseous disinfection, when performed, is by the use of paraformaldehyde and potassium permanganate.

Quarantine officers are full-time employees.

SUPERVISING MEDICAL INSPECTORS.

Eight supervising medical inspectors' districts have been created, so that each supervisior has six health officers and three quarantine officers under his supervision. The work of these employees is followed, and premises from which communicable diseases have been reported are visited in order to check the efficiency of the work performed by these officers in their respective districts. Nine supervising medical inspectors, who are full-time employees, are provided, one in charge of each of the eight districts and a ninth who spends a portion of his time in the office and forms a connecting link between it and the field, being available for any special investigations upon which immediate report is desired.

In addition to checking the work of the health and quarantine officers and determining the efficiency of these employees, the supervisors are required to investigate all suspected cases of smallpox, reinspect all doubtful cases in which the diagnosis is disputed, and investigate sources of localized epidemics of typhoid fever, diphtheria and scarlet fever. They also make special investigations of communicable diseases requiring expert knowledge; they perform intubations, and carry an intubation outfit with them while on duty; they instruct health officers and special vaccinators who enter the service in their duties and reports and make recommendations as to their efficiency.

The inspectors must keep in touch with the bureau while in the field by telephoning every two hours, in order to ascertain if there are any new assignments, or if their services are needed, and they must be within call day or night. Once a month they inspect and check up the different supply stations, to see that an ample stock of report cards, culture tubes, etc., are on hand, and also inspect the incubators in the police stations, at least once a month, to see that they are operating satisfactorily.

The accompanying table presents pertinent data regarding the handling of communicable diseases.

TABLE.

Disease.	Hospitalization of patients.	Period of quarantine for patients.	Period of quarantine, contacts.	Exclusion from school, patient.	Exclusion from school, contacts.
Diphtheria	In class C quarantine if possible.	Until negative results from cultures made on 2 consecutive days.	No detention in class A and B quarantine, except children must not attend school, Sunday school, and places of assembly; class C quarantine same as patient and negative result from culture.	Until throat and nose cultures made on 2 consecutive days give negative results.	7 days from last exposure and after negative culture.
Scarlet fever	do	Until (a) termination of desquamation; (b) cessation of all discharges from ear and nose; (c) disappearance of evidence of acute inflammation of tonsils. If (b) and (c) are satisfactory case may be terminated in 5 weeks.	Same, except negative culture does not apply.	7 days after terminal disinfection.	Susceptibles: 7 days after last exposure, provided there is change of domicile. Those that have had the disease; no exclusion if change of domicile.
Smallpox	Compulsory	End of scaling	Under observation for 18 days from last exposure.		No exclusion if recently successfully vaccinated or after vaccination.
Measles	No	Until temperature has been normal for 24 hours.	Duration of illness of patient.	Duration of illness.	Susceptibles: 18 days from last exposure. No exclusion for those that have had the disease.
Whooping cough.	do	5 weeks. (See Remarks.)	None	Excluded for period of quarantine.	Susceptibles excluded. No exclusion of those who have had the disease.
Mumps	do	Isolation until all swelling has subsided.	do	Excluded until swelling has subsided.	Susceptibles 3 weeks. No exclusion for those that have had the disease.
Chicken pox	do	14 days or until end of scaling.	do	Period of quarantine.	Susceptibles: 14 days. No exclusion of those who have had the disease. (See Remarks.)
German measles.	do	10 days	do	do	Susceptibles: 3 weeks. Others no exclusion.

TABLE.

Detention other members of family breadwinners.	Termination of case.	Disinfection, variety.	Special duties of health officer.	Remarks.
No detention in class A and B quarantine. In class C breadwinner must live away from house or in room sealed off.	When cultures on 2 consecutive days give negative results.	Thorough scrubbing with hot water and soap, floor, woodwork, and soaking washable articles in disinfectant solution, airing and sunning; milk bottles boiled; gaseous when case is terminated early.	Take diagnostic culture from patient if not already done. Culture all contacts. Administer immunizing doses of antitoxin to contacts. Take terminal cultures from patient.	Carriers must be isolated and are terminated on one negative culture. Cases remaining positive for 21 days terminated as carrier, and if they persist to 28 days a virulence test is made.
.....do.............	Same requirements as given under heading "quarantine for patient."	Same as for diphtheria, supplemented by gaseous disinfection.	Examine cases for termination.	The following governs request for termination of case. If under 21 days from onset, the supervisor examines the patient; 21 to 28 days, the health officer, and after 28 days, the quarantine officer.
Observation for 18 days.	....	Gaseous. Paraformaldehyde and potassium permanganate method.	Vaccinate and revaccinate if necessary all persons exposed to the infection.	
None for adults....	After 24 hours normal temperature.	None............	....	
None.............	....	.....do..........	....	First 2 weeks of quarantine patient must be kept in house or yard of premises. Remaining period of 3 weeks allowed to go at large provided a band marked whooping cough is worn.
.....do.............	....	.....do..........	....	
.....do.............	....	.....do..........	If vaccinal status is not known or patient is an adult, the health officer inspects the case; otherwise no inspections.	Contacts from exposure to a case in schoolroom are not excluded for 10 days from such exposure; at end of this period excluded for 7 days.
.....do.............	....	.....do..........	Inspection of all reported cases in order to verify diagnosis.	

TABLE—Continued.

Disease.	Hospitalization of patients.	Period of quarantine for patients.	Period of quarantine, contacts.	Exclusion from school, patient.	Exclusion from school, contacts.
Typhoid fever.	Recommended when proper precautions can not be carried out at home.	Urge isolation and treatment apart from other cases.	None	Time of illness	No
Acute anterior poliomyelitis.	No	Rigid isolation for 5 weeks.	5 weeks. Children quarantined on the premises. Access to yard allowed.		Children of family excluded for period of quarantine.
Epidemic cerebro spinal meningitis.	do	Isolation for 2 weeks.	2 weeks. Children quarantined on the premises.		do
Streptococcic sore throat.	do	Isolation	None		Until termination of case.
Ophthalmia neonatorum.	If medical attendance can not be afforded, send to hospital or dispensary for treatment.	None	do		No

The following is supplementary to data given in table:

(1) *Special quarantine for stores.*—If a case of contagious disease is in any way connected with a store, either the patient must be sent to hospital or the part of the house or rooms used by the person sick must be effectively sealed off from the place of business. All communication between sick room and store must be stopped. If neither of the above plans can be carried out the store must be closed.

(2) *Quarantine for hotels and boarding houses.*—In cases of scarlet fever and diphtheria, unless isolation can be effected in adequate quarters with private bath and toilet facilities and with a trained attendant,

TABLE—Continued.

Detention other members of family breadwinners.	Termination of case.	Disinfection, variety.	Special duties of health officer.	Remarks.
None	End of illness, provided 4 weeks have elapsed.	Only in cases where the discharges and excretions have not been properly disinfected, day by day, during last 3 weeks of illness. Scrubbing floors and woodwork, boiling linen used by patient.	Thorough inspection and complete report embracing following data: Location, milk supply, water supply, occupation, sanitary condition of premises, whether absent from city and places visited, etc. Secure blood for Widal.	Urge screening against flies of room occupied by patient.
do		Disinfection on termination. Method same as for scarlet fever.		Room or rooms used by patient must be screened against flies.
do		do		Do.
do		Boiling milk bottles and infected clothing.	Post milkman's warning card.	
do		None	Investigate all cases reported by midwives, charity organizations, school nurses, and other persons. Make smears for bacteriological examination, and use a nitrate of silver solution in eyes of patient. Urge securing medical attendance, sending case to hospital or dispensary, or refer the case to county physician for treatment.	

the patient must be removed to the hospital. In cases of measles and whooping cough the patient and susceptibles must not leave the placarded rooms.

(3) *Quarantine for milk depots and vendors*—The patient must be either hospitalized or removed to another location, except in certain instances where the room occupied by the patient can be sealed off to the satisfaction of the health officer.

QUARANTINE TREATED IN DETAIL.

A further consideration of this subject is of importance in showing its effectiveness in preventing spread of infection and the occurrence of secondary cases among the susceptible contacts under the different classes of quarantine.

A study of the three classes of quarantine inaugurated by the department of health in 1914 is very interesting, especially the very satisfactory showing in classes A and B. A careful examination has been made of the results achieved by this mitigated quarantine, and the commissioner recently published some statistics on the subject. The following tabulated statement contains the data presented by him and the addition of other cases to the end of January, 1915, furnished by the bureau. The table embraces the two important communicable diseases in which proper isolation is required:

SCARLET FEVER.

	Cases.	Susceptibles.	Contact cases.	Per cent.
Quarantine "A":				
Prior to Jan. 1, 1915	117	198	1	0.85
January, 1915	32	71		
Total	149	269	1	.67
Quarantine "B":				
Prior to Jan. 1, 1915	365	445	16	4.38
January, 1915	34	61		
Total	399	506	16	4.26
Quarantine "C":				
Prior to Jan. 1, 1915	1,189	1,952	71	5.96
January, 1915	122	182	10	8.2
Total	1,311	2,134	81	6.17
Hospitalized:[1]				
Prior to Jan. 1, 1915	460	417	10	2.39
January, 1915	47	71		
Total	507	488	10	1.97

DIPHTHERIA.

Quarantine "A":				
Prior to Jan. 1, 1915	204	792		
January, 1915	38	67		
Total	242	859		
Quarantine "B":				
Prior to Jan. 1, 1915	655	2,279	6	0.91
January, 1915	39	68		
Total	694	2,347	6	.86
Quarantine "C":				
Prior to Jan. 1, 1915	2,994	11,627	127	4.24
January, 1915	341	626	19	5.57
Total	3,335	12,253	146	4.37
Hospitalized:				
Prior to Jan. 1, 1915	711	2,116	1	.14
January, 1915	73	261		
Total	784	2,377	1	.13

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[1] From those hospitalized, 5 cases occurred in other members of family subsequent to and within seven days after return of patient from hospital.

Deductions.—A study of the table permits some interesting deductions:

1. Class A quarantine is effective in preventing spread of infection and meets the objections raised by the more financially able against hospitalization.

2. Class B quarantine is more effective than would naturally be supposed and shows the results of educational instruction by the health and quarantine officers. The showing made in diphtheria is excellent, and in investigating the much larger percentage of contact cases in scarlet fever, it was found that the greater number of such cases occurred in the early months of this quarantine procedure and that during the last three months no contact case had developed. This improvement is probably due to more careful explanation to the untrained attendant on the part of the health and quarantine officers. A steady improvement in effectiveness is shown in this class of quarantine, and it is one that meets the objection against hospitalization.

3. While the data on class C quarantine shows that the number of contact cases has undoubtedly been reduced on account of instruction given, the results are not satisfactory. Hospitalization is urged and required in this class of cases, but at present the hospital facilities are inadequate to care for the number of patients.

HOSPITAL FACILITIES.

The health department has the following hospital facilities available for the care of communicable diseases: Isolation hospital for smallpox, 35 beds; contagious disease hospital for diphtheria, 65 beds; 125 beds in the county hospital for scarlet fever; and a small number of beds in the Durand hospital for diphtheria and scarlet fever.

The construction of a new contagious disease hospital has been commenced, and some of the pavilions will be ready for use during the year. This hospital will consist of necessary administration and service buildings and five four-story pavilions, and will have a capacity of 700 beds.

When this new hospital is ready for receiving patients, all cases of scarlet fever and diphtheria that can not be isolated under class A and B quarantine should be hospitalized. Considerable opposition will at times be encountered, but if the rules of the institution are sufficiently elastic to allow the mother to accompany the child to the hospital and spend a day or part of the first day, so that she can see for herself that the child is contented and receiving good care, the opposition to hospitalization will in the main cease.

With the development of its A and B quarantine and the hospitalization of patients not falling in those classes, the health department need not fear a comparison of its management of contagious diseases with that of any city.

RECORD OF COMMUNICABLE DISEASES.

The following table is presented to show the occurrence in Chicago of five of the most important communicable diseases during a period of five years:

Comparison and total number of cases of diphtheria, scarlet fever, smallpox, typhoid fever, and tuberculosis, by months, for 1910, 1911, 1912, 1913, and 1914.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total cases.	Total deaths.
Diphtheria:														
1910	468	443	470	527	468	484	406	394	470	769	1,155	1,907	7,961	822
1911	738	611	624	568	621	526	484	372	560	872	941	752	7,669	878
1912	617	506	526	535	472	538	[illegible]	346	389	823	1,077	1,035	7,288	950
1913	1,175	890	823	676	709	713	493	330	429	730	813	812	8,593	969
1914	744	542	676	515	528	449	443	372	478	679	806	839	7,071	764
Scarlet fever:														
1910	688	671	692	600	680	595	298	271	269	364	583	716	6,427	404
1911	894	726	867	963	1,050	613	338	280	309	360	506	516	7,422	476
1912	611	671	921	1,038	1,046	848	481	418	293	537	799	1,040	8,703	602
1913	1,797	1,596	1,828	1,431	1,149	873	370	206	174	286	426	464	10,600	906
1914	477	418	511	458	417	231	162	82	107	136	243	276	3,518	228
Smallpox:														
1910	3	1	1	3	10	2	0	2	1	1	1	6	31	1
1911	14	19	6	36	25	3	0	0	1	1	0	0	105	3
1912	1	2	5	16	17	7	4	5	1	2	2	6	68	7
1913	56	10	7	17	6	7	3	0	2	4	17	7	136	1
1914	15	11	21	8	1	5	2	1	2	2	1	1	70	1
Typhoid fever:														
1910	92	77	31	49	49	57	119	352	387	363	314	160	2,050	300
1911	89	56	43	45	85	105	131	172	225	190	161	141	1,443	242
1912	86	61	52	46	60	72	75	129	162	151	74	77	1,045	173
1913	66	45	53	74	86	63	94	181	200	251	272	170	1,555	246
1914	98	73	49	76	51	67	93	128	176	125	140	105	1,181	167
Tuberculosis:														
1910	392	472	450	471	522	607	493	494	461	599	555	605	6,121	3,885
1911	727	597	682	723	825	662	670	559	683	649	686	699	8,162	3,726
1912	685	748	743	658	458	551	622	632	600	615	512	688	7,512	3,750
1913	1,028	581	777	771	851	800	702	680	817	869	720	719	9,315	3,848
1914	788	679	1,042	1,022	892	814	724	826	819	827	613	963	10,009	3,909

A study of the statistics shows quite markedly the seasonal fluctuation in the number of cases of diphtheria and scarlet fever. With the opening of schools in September an increase in the number of cases of these diseases occurs, which becomes sharply pronounced in October and reaches a maximum in December or January. There is a gradual decline in the number of reported cases in the spring months, and this is more marked in diphtheria than in scarlet fever; but the decrease is rather small until July and August, when there is a great falling off in the number of reported cases.

Smallpox.—Chicago has a good record relative to smallpox, as the statistics show comparatively few cases, notwithstanding the fact that this city is a great center of travel and receives a large number of immigrants. This is due to a progressive vaccination campaign in which the cooperation of most of the large department stores, factories, and workshops has been secured. Most of these establishments require their employees to be vaccinated or protected by previous successful vaccination. Furthermore, a large percentage of the citizens were vaccinated in 1904 and 1905 during an outbreak of smallpox.

The following data furnished me by the bureau is deemed of sufficient value to insert in this report. It covers 15 years, giving number of cases, vaccinal status of all, and the number of deaths:

Year.	Cases of smallpox.	Died.	Never vaccinated.	Vaccinated.
1899	25	1	24	1
1900	52	2	48	4
1901	276	4	237	39
1902	339	5	318	21
1903	389	47	339	50
1904	358	28	311	47
1905	546	61	402	144
1906	23	0	21	2
1907	94	0	82	12
1908	82	0	74	8
1909	25	0	23	2
1910	31	1	29	2
1911	105	3	96	9
1912	68	7	60	8
1913	136	1	124	12
Total	2,549	160	2,188	361

NOTE.—None died who had been vaccinated and none of the 361 who were vaccinated had ever been revaccinated.

Typhoid fever.—A study of the table shows that the status of this disease in Chicago is satisfactory, as regards the number of cases, in comparison with the typhoid incidence of other large cities; also that a marked improvement has taken place during the five years covered by the statistics.

The data show a slight increase in the number of cases in July, a rather sharp advance in August, with the maximum reached in September; a slight decline occurs in October and a gradual diminution in the number of cases takes place during November and December, with a sharp decline in January, the normal low curve being reached in March.

The records of the health department show that in 25 to 30 per cent of the cases of typhoid fever occurring in Chicago the infection was contracted outside of the city, and as July and August are the principal months for vacation, it seems probable that the regular autumnal increase in the disease is largely due to this factor and that the resultant increased number of contacts and carriers is sufficient to explain the relatively large number of cases during the fall months. Another factor that must be taken into consideration is that, with the larger number of cases the possibility of a mild attack of the disease or a carrier in the person of one engaged in handling milk is materially increased. Flies may be a minor distributing cause, as they are more prevalent during July, August, and September. The increase in the number of cases in October and November, 1913, was due to two localized outbreaks that occurred on two milk routes; in one a driver was found suffering with a mild attack of typhoid fever and in the other a carrier was engaged in handling milk.

It was found that in the vast majority of cases the disease was terminated and the case discharged without proper bacteriological examination to determine that the patient no longer harbored the bacilli in the stools. As 56.4 per cent of the cases during 1914 were treated in hospitals it seems desirable that these and all other cases should not be terminated until proper examination has been made to eliminate the possibility of carriers. A further study should be given this subject in order to determine whether such an examination is feasible and if facilities exist for a proper supervision of carriers that might be found.

Tuberculosis.—There were reported to the health department 10,009 cases of tuberculosis in 1914, and as the reported deaths numbered 3,909, it is apparent that only the more pronounced cases of the disease were reported. A safe estimate of the total number of cases of tuberculosis in Chicago would probably be 20,000.

While the control of this important communicable disease is not vested in the health department, there is such a close relationship between the disease and certain health activities that it has been deemed advisable to consider the subject in this connection. The commissioner of health is ex officio a member of the board of directors of the Chicago Municipal Tuberculosis Sanitarium and acts in an advisory capacity in the deliberations of the board relative to the control of tuberculosis and the sanatorium treatment of the disease.

The health department cooperates to the extent of performing terminal disinfection of houses after death of the patient or transfer of the case to the sanatorium or hospital. It also keeps a house record and individual record card of all cases reported, and the sputum is examined in the laboratory, a bacteriologist paid by the tuberculosis board being detailed for this duty.

Activities of the Municipal Sanitarium Board.

Rapid strides have been made in the last few years in ways and means for controlling tuberculosis, and Chicago now occupies a place in the forefront of American cities in this particular. In 1905 the entire provision for tuberculous patients in Chicago consisted of about 200 beds, 150 of which were in the poorhouse, and there was no organized effort toward the prevention of the disease or to aid the sufferer in the incipient stage. The year 1915 shows an entirely different picture, as at its end there will be 2,300 sanatorium and hospital beds, and there now exist a comprehensive dispensary system and all the auxiliary means essential in a fight against the disease.

The first organized effort was the formation of the Chicago Tuberculosis Institute in 1906. The object of the institute was to collect and disseminate knowledge relative to the prevention, care, and cure of tuberculosis, to show the necessity for improved living conditions and education along these lines, and to provide dispensary treatment for the poor suffering with tuberculosis. A camp was established, and it was demonstrated that tuberculous patients could be satisfactorily treated in the climate of Chicago. The following year eight dispensaries for the treatment of tuberculosis were opened under the auspices of the institute. The education of the public in the correct way of living and the necessity for fresh air, as well as in the care of the consumptive in the home, was an important feature of the work.

A law was passed by the Illinois Legislature in 1908 enabling cities and villages to provide by popular vote for the erection and maintenance of tuberculosis sanatoria by the creation of a fund by a tax of 1 mill. Such provisions were adopted in Chicago in 1909, and the Chicago Municipal Sanatorium was authorized; but on account of the provisions of law governing taxation, the first levy for sanatorium purposes was not available until January, 1911. The scope of the sanatorium law was extended by an amendment enacted in 1913. Under the provisions of the law as they now exist, municipalities have the power to maintain branch sanatoria, dispensaries, and other auxiliary institutions for the treatment and care of persons suffering with tuberculosis; and to extend into the homes of those so afflicted the benefits and privileges of such institutions, including the furnishing of nurses, medicines, attendants, and other aids necessary to effect a cure, and to do all things necessary to stamp out tuberculosis.

The operations of the Chicago sanatorium are carried out under four definite procedures: (1) The dispensary department, (2) the sanatorium home extension department, (3) educational department, and (4) the sanatorium proper.

Dispensary department.—In different sections of the city there are maintained 10 dispensaries, which have a combined personnel of 35 physicians and 50 field nurses. The functions of this department are to detect cases of tuberculosis, select cases suitable for sanatorium treatment, and supervise the treatment of cases in their homes. The nurses act in conjunction with the physicians in this work, make frequent visits to the homes of the sufferers and teach them the necessary precautions to observe, the correct mode of living, and the necessity and value of fresh air. The growth of the work in this department is shown below:

	1911	1912	1913	1914
Number of persons under observation	4,943	9,159	12,593	14,972
Number of positive cases	1,911	2,196	2,727	3,638
Visits of patients to dispensaries	22,331	42,335	43,989	52,244
Visits by nurses to homes of patients	31,980	32,678	39,377	46,183

The sanatorium home extension department.—This will probably become one of the most important functions of the work, as it carries into the homes of sufferers who can not go to the sanatorium certain institutional benefits. The homes are visited, inexpensive sleeping porches are constructed, and the necessary equipment for outdoor sleeping, such as reclining chairs, beds, bed clothing, canvas curtains, etc., are furnished.

Educational department.—This department was organized four years ago, and the work is being standardized along definite lines. It consists of the distribution of leaflets and pamphlets dealing with proper living to prevent tuberculosis, the early symptoms and diagnosis of the disease, and the precautions to be observed by the sufferer for the protection of other members of the family. Popular lectures and exhibits are given in the public schools and before other audiences.

Sanatorium.—The new municipal sanatorium, opened March 1, 1915, is situated on 160 acres in the northwest section of the city. It was built out of funds created by tax levy, and when completed and equipped will have cost, including the site, about $2,400,000. The construction of the sanatorium was commenced in 1911, and the plans of the institution were the result of much careful study. At present it has a capacity of 650 beds, but an increase of 300 beds will be provided during the year by the erection of 12 additional cottages.

The sanatorium has the advantage of location in the city, at the end of a street car line, so that friends can visit patients. The community in general is in easy touch with it, and this enhances its educational influence.

The institution is designed for the care and treatment not only of incipient cases, but also of those advanced cases in which an arrest of the disease may possibly be effected by the application of sanatorium treatment.

First of the main buildings is the administration building, in which are located the offices of the director, assistant director, business manager, nose and throat examination rooms, main laboratory, X-ray room, and consultation rooms. The upper floor of this building is used as quarters for the medical staff, and in the basement are various storerooms.

Next to this is located the service building, which contains the patients' cloak rooms, dining rooms, main kitchen, cold-storage rooms, bakery, etc. Quarters are provided in this building for attendants, and, in view of the fact that it is planned to give employment to discharged patients in various departments of the institution, open-air sleeping porches in this and other buildings are a special feature.

The infirmary is constructed in two wings in which patients are treated and a connecting central portion in which are located quarters for the attendants required in connection with the infirmary. Here open-air sleeping porches are also a feature. This building has been planned for securing a maximum of sunlight and fresh air, and admirably meets the requirements in the care and treatment of bed cases of tuberculosis. It has a capacity of 300 beds, 150 in each lateral wing, distributed in small wards of 10 or 12 beds each and private rooms with 1 or 2 beds.

Two important departments have been instituted in this infirmary; (*a*) maternity department for tuberculous women, and (*b*) nursery for infants of tuberculous mothers. The former has all the auxiliary arrangements and a series of private rooms, so located as to meet all needs. The nursery is a very important provision, as it will prove of value in meeting one of the serious problems of the tuberculosis situation, i. e., the care of infants of tuberculous mothers and the education of the community in the proper care of all infants with poor resistance who are in contact with tuberculous infection. Two classes of infants are received: Newborn infants from the maternity department of the infirmary and those removed from home surroundings in which prevention of infection is impossible. Full consent of parents is necessary for admission in either case.

Cottages having a capacity of 25 to 30 beds each have been provided for the treatment of ambulant cases. There are now 350 such beds available, and since, as already stated, 12 additional cottages will be erected during the year, the sanatorium will be equipped with 650 beds for this class of patients. The general type of the building is a central portion containing dressing room, toilets and lavatory, nurses' room, and sitting room, and on each end an open-air ward of 12 to 15 beds.

The cottages for children are of an original design and embrace the features of an open-air school. Of the total capacity of the institution 240 beds are for children, housed in open-air cottages in groups of 25 to 30.

A separate building for nurses' quarters has been provided.

In its institutions for tuberculosis, Cook County, in which Chicago is located, has provided 900 beds for the advanced cases.

In addition to the 1,850 beds already mentioned may be added 97 beds of the Chicago fresh-air hospital and 100 beds of the Edward Sanatorium. The latter institution is for the treatment of pay patients, the charges being $10 per week for ambulant cases and $15 a week for infirmary cases. There are also other sanatoria for the treatment of tuberculous patients, so that there will be available during 1915 about 2,300 beds for this class of patients.

The amount available for tuberculosis work is about $900,700 annually, so that Chicago is in a position to carry out an active and useful campaign against tuberculosis.

I am indebted to the reports of Dr. Sachs, chairman of the municipal tuberculosis sanatorium board, for much of the data presented on tuberculosis.

Open-air schools and rooms.—In addition to the sanatoria and hospitals for tuberculous sufferers, provisions through a private enterprise, the Elizabeth McCormick Foundation, have been made for 4 open-air schools and 35 open-air rooms for the care and instruction of children suffering with tuberculosis in the quiescent stage. The average attendance in these schools and rooms is 550 pupils; but as the principle of an open-air school will be followed at the new municipal tuberculosis sanatorium, increased facilities will exist for this important work.

These schools are conducted on a cooperative principle: The Foundation supplies the physician, attendants, and extra clothing, and bears the greater part of the expense for food. The board of education provides the open-air rooms, school equipment, and teachers. The municipal tuberculosis sanatorium supplies the nurse and pays a part of the cost for food. The sites for the schools are provided by civic and charitable organizations.

On arrival at school the pupils are given food consisting of a cereal, bread and milk, and a substantial meal at noon, and are required to lie down for one hour each day, generally from 12.30 to 1.30. Records of weight and progress are kept.

Office Procedure of Bureau.

The office procedure will be considered under the following functional divisions: (*a*) Receipt of reports of communicable diseases and cases suspected of being of this nature; (*b*) assignment of cases to health officers and quarantine officers; (*c*) reports required of health officers and quarantine officers; (*d*) use of spot maps in charting cases of certain communicable diseases, including book records in specific instances; and (*e*) special and general filing system.

Reports.—Reports of communicable diseases are made by physicians on postal cards furnished by the health department that may be secured from any of the 55 supply stations maintained in different sections of the city. A separate report must be made out for each case in a family. At times a physician makes report of a case by telephone, and in such instances the clerk "fills in" the pertinent data on the regular report card. Reports are also received by mail or telephone from persons other than physicians, and in all such instances the case is assigned as a suspected communicable disease and the necessary data placed on a different report card, labeled "Suspected case."

As there is always some one on duty in the office, a report can be received day or night. If work of an emergency nature arises after regular office hours, the circumstances are telephoned to the health officer in whose district the emergency has arisen, and in event he can not be found, the facts are communicated to the supervisor.

Assignments.—The bulk of the reports are received in the mail which is delivered at the bureau at 7.30 a. m. A number of clerks are on duty at that hour and the mail is rapidly sorted. All reports of communicable diseases and those of suspects are arranged according to health officers' districts; a large wall map of the city, divided into 50 districts, with the name of the health officer and quarantine officer for the respective districts charted thereon, is consulted in order to insure accurate assignment. Such reports are checked against the files to make certain that the case reported is a new one and not a second report on a case already assigned.

This work completed, the health officer is called by telephone and all cases in his district, with name and address of patient and the communicable disease reported, are assigned; the reports of suspected cases are also given him in the same manner. There are generally four clerks engaged in making the assignments, district by district, and they finish their work by about 8.30 a. m. A second assignment is made in the same manner at 1 p. m., embracing all reports of cases received in the forenoon. A third assignment is made, between 5 and 6 p. m., of any additional cases. Any reports of cases received after the last assignment are placed in a proper box and included in the first assignment on the following day.

The report cards are then arranged according to disease, and the total number of the different diseases counted and tabulated to show an increase or decrease in the number of cases occurring from day to day. A mimeograph copy is made of all placardable diseases reported during the day, giving the name and address of the patient, the name of the physician reporting the case, the city ward in which the case occurs, and the name of the health officer. This is prepared in the morning and includes the cases assigned in the afternoon of the preceding day and those in the first assignment of the day of issue. A copy is sent to every health officer, quarantine officer, and school health officer. This is received in the afternoon of the same day, and includes the bulk of the cases assigned on even date. The health officer is required to check the cases assigned by telephone against those enumerated on this list, and if any discrepancies are noted he must telephone the bureau for verification and instructions.

The quarantine officers receive assignments twice a day, at 8.30 a. m. and 12.30 p. m. In the first assignment they receive calls for disinfection, termination of cases, removal of placards, and reports of lax quarantine. These various items are arranged in envelopes according to districts, and the assignment of the notices is made by telephone in the same manner as outlined for that of health officers. In the afternoon assignment are included further notices of the same nature that have accumulated during the morning. The quarantine officers consult the mimeograph list for the cases of communicable diseases occurring in their districts, so that they can follow the cases inspected and quarantined by the health officer and see that proper quarantine is maintained.

The supervisors report at the office each morning to receive any special assignments.

Reports required of health officers and quarantine officers.—Health officers are required to forward to the bureau within 24 hours an inspection report on every case of communicable disease assigned them. This card must be completely filled out and give all data pertinent to the case. These inspection reports are made out at the conclusion of the day's work and are mailed so as to arrive at the bureau in the first mail of the following day. A daily report embracing all work done must also be prepared and forwarded so as to reach the bureau at the same time. These reports are checked against each other, and the inspection reports are compared with the assignments, and if it is found that an inspection report is missing, the matter is immediately taken up with the health officer. In investigating suspected cases the regular report card must be forwarded in addition to an inspection report.

The quarantine officers must prepare daily reports embracing all the work done, the address of premises visited, and the hour when the visit was made. This report must be forwarded so as to arrive at the bureau in the first mail of the following day.

Spot maps.—The cases of the following diseases are shown on spot maps: Diphtheria, scarlet fever, typhoid fever, and diarrheal diseases. A separate map is used for each disease and covers a period of one month, different colors being used to chart the cases for each week. Carriers are shown on the same map by means of a spot of a different shape. The diseases are spotted according to districts and location. The map of the preceding month is placed in juxtaposition so that a comparison can be easily made.

Two other spot maps are kept for recording cases of typhoid fever. One shows the districts supplied by water from the different pumping stations and the cases of typhoid occurring therein. The other, a very large and complete map, is kept in the division chief's office. This shows the cases by districts, and by comparing with a chart showing density of population the percentage of cases per capita is readily seen. Some interesting details are the use of different colored tacks to represent the cases in different months, a larger tack to show fatal cases, and different colored bits of paper beneath the tack to indicate whether the case is a primary one, or contact, or if the infection was contracted outside of the city.

Spot maps are also kept for each of six large milk dealers. The number of supply stations is shown and the territory to which milk is distributed from each station. Cases of diphtheria, scarlet fever, and typhoid fever are charted, and if two cases of any of these diseases occur in one week on any milk route an investigation is made in order to determine if the milk has been a factor.

Charts for the different schools are also kept, and if two cases of scarlet fever or diphtheria occur in one school in one week a special investigation is made.

Book records are kept of cases of typhoid fever and smallpox. Concerning the former, all pertinent data is included, so that easy reference is possible. The names and addresses of all milk dealers are kept in a book and each case of diphtheria, scarlet fever, or typhoid is charged against the milk dealer; thus if two or more cases occur on the route of one dealer the milk supply can be promptly investigated. A record book of ambulance service shows the name of patient, address from which removed, time of removal, hospital to which taken, and disease.

Filing system.—All data pertaining to a case of communicable disease are filed in a special envelope, and as soon as a case is reported a record is prepared, to include all data from the physician's notification card to the termination of the disease. If a secondary case occurs in another member of the family through contact, the case record is attached to that of previous case. Different colored envelopes are used for different diseases, and the following synopsis of the case is written on the front of the envelope: Name, age, and address of patient, name of physician reporting the case, date on which patient was taken ill, and date of termination of case. The name of the disease is printed in heavy type in the upper corner of the envelope. Case records for diphtheria, scarlet fever, measles, and whooping cough are filed together, and special files are kept of each of the following diseases: Tuberculosis, typhoid fever, smallpox, and infantile paralysis. The files are arranged alphabetically by streets and numerically by case number.

Until a case is ended its record remains in the live file, and the clerk in charge goes over the file daily for cases of measles and whooping cough. In measles if the record shows no susceptibles in the family the physician is advised that the case can be terminated after the temperature has been normal 24 hours. If there are susceptible contacts, cases of measles are set for termination in 14 days, and whooping cough at the expiration of 6 weeks. The case records of diphtheria and scarlet fever are examined twice a week, and in all cases of these diseases not terminated in four and five weeks, respectively, a communication is sent the attending physician asking if the case is not ready for termination. If no reply is received in three days such cases are set for termination. By this procedure a careful watch is maintained over ending cases in this important group, and unnecessarily prolonged periods of isolation and quarantine are obviated.

House record cards are made for the following diseases: Diphtheria, scarlet fever, typhoid fever, tuberculosis, and infantile paralysis. These are filed separately, alphabetically by streets, and numerically by case number.

Antitoxins.—Diphtheria antitoxin is supplied by the State in 1,000, 3,000, and 5,000 units. It is kept on hand at the various supply stations (drug stores) throughout the city and in the office of the bureau of medical inspection and is free for all classes of patients. The physician receiving and using the antitoxin is required to fill out duplicate blanks, giving name, age, and address of patient on whom it was used, and to return the same to the supply station, where one copy is filed and the other sent to the secretary of the State board of health.

A supply of diphtheria antitoxin furnished by the Memorial Institute is also kept on hand for sale to druggists and physicians at cost, plus expense incident to handling. This supply was instituted a few years ago when the price charged for antitoxin was so high as to place its use beyond the means of the poor and before the State had made a general supply available.

Tetanus antitoxin is supplied to physicians on request, either for immunizing purposes or for the treatment of cases of tetanus.

Typhoid fever prophylactic vaccine is also furnished physicians, and about 100 treatments of three doses each are distributed monthly.

Vaccine against smallpox is supplied to any person desiring it, and an ample supply of fresh vaccine to meet emergencies is kept constantly on hand.

A book record is kept of all antitoxins and vaccines issued.

Ambulance service.—When the health officer hospitalizes a patient, he must report to the bureau all the circumstances, stating whether the procedure was carried out by request of the attending physician or the family of the patient, or was necessary on account of lax quarantine. He telephones the bureau, giving the name, sex, age, address, and disease of the patient. A clerk then ascertains by telephone if accommodations are available and requests that the ambulance remove the patient to the hospital specified. A book record is kept of all ambulance calls, giving the time of notice and the hour at which the patient was received at the hospital.

Clerical Division.

The daily office work of most of the employees in the clerical division has been given under office procedure. Consequently there is not much to be added.

The office force is under the direction of a chief clerk, who outlines the work of the junior clerks and assigns them to special activities. This results in increased efficiency of the office force as a whole, as each clerk becomes trained in his particular duty, and therefore is able more promptly and efficiently to dispatch the work allotted to him. The chief clerk issues general orders governing office administration and exercises general supervision over all the work performed by his assistants. He also pays special attention to the storeroom and the quantity of antitoxin and vaccines in stock, to insure that the requisite amount of such supplies is kept on hand.

At the end of each month, in addition to the work already mentioned, a tabulation is made of all the placardable diseases by wards, and records are kept of the work performed by the school health officers, dental surgeons, and nurses. A directory is maintained of all employees of the bureau and of the chiefs and supervisors of other bureaus.

Efficiency records.—The rating of office employees is by judgment marks, with deductions or demerits for absence and errors. The record of field employees is based on work requirements, each variety of work being given a specific value, less demerits for negligence or failure promptly to execute work assigned in accordance with the regulations prescribed in the handbook. The values of different units of work and the demerits for failure to execute them in specific instances are clearly set forth in the handbook issued for the guidance of the field employees of this bureau.

Files.—The files in this office are in excellent condition, well arranged, and kept strictly up to date. The live file receives constant attention and is never allowed to fall behind in recording the daily work. The other files are carefully arranged for quick and easy reference.

The organization of the office force is well planned, and the work accomplished has reached a high standard of efficiency, deserving of commendation.

Division of Child Hygiene.

As the work performed by this division is fourfold in character, it is advisable to consider it under the following subdivisions: (*a*) medical inspection of school children; (*b*) dental service and dental dispensaries; (*c*) nursing service; and (*d*) infant welfare.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

In a city the size of Chicago, with 330 public and 220 parochial schools and a school population of more than 400,000 pupils, the problem of a daily medical inspection service is not a small one. Previous to 1914 the inspection of schools was performed by the same health officers who inspected the reported cases of communicable diseases. At that time 100 health officers performed the combined duties. In March, 1914, a reorganization of the bureau of medical inspection was effected and a division of child hygiene was created with an assistant bureau chief in charge; in considering this branch of the work, therefore, it must be borne in mind that, although an inspection of schools was started about six years ago, it has been operating on its present plane for only 12 months.

In order to meet the requirements of this inspection service 105 school districts have been arranged, each containing an average of five schools with about 4,000 pupils in attendance. These districts are formed in relation to the number of school children, that there may be from 4,000 to 4,500 to each of the 105 school health officers assigned to this medical inspection service. A further provision has been made for this work by providing nine supervisors, eight of whom are engaged in field work, and one in connection with the office and on special details. For purposes of administration the school districts are grouped into eight districts; thus a supervising health officer can be assigned to each and exercise supervision over the work of 13 school health officers.

In the new school buildings satisfactory waiting and consultation rooms are being provided for the use of the health officer in his work; but in the majority of the old buildings there is no proper room available and the health officer has to use any space he can secure, often a part of the principal's office.

School health officers.—The principal object to be attained in the medical inspection of schools is the detection of communicable and parasitic skin diseases, and the exclusion of those suffering from the former and in some cases from the latter. An efficient daily inspection will promptly detect the few cases that may convey infection and their immediate exclusion obviates any necessity for closure of a school, even when the disease is diphtheria or scarlet fever.

The school health officer is required to make a rapid inspection of all children upon the opening of the school term and at the opening of the session after the Christmas holidays, in order to detect the presence of any communicable disease in pupils or evidences of a recent attack in any of those seeking admission.

All cases of communicable disease are excluded from school. The health officer notifies the principal in writing, giving the name, address, and schoolroom of pupil. The child is sent home with an exclusion card to the parents. This gives the disease with which the child is suffering and states that he must not be allowed to attend school until the case has been released by the health officer. A notification card properly filled out must be sent to the bureau.

If two or more cases of diphtheria occur in a given school in one week, if the pupils were in school with sore throat, or if two or more cases attended the same room, cultures are made from the throats and noses of all the pupils in the suspected class room. Any absentees from the room must not be readmitted to school until cultures have been taken. When two cases of scarlet fever are reported from a particular school in one week, the health officer examines daily for seven days all pupils in the class room attended by these patients. The principal must also be cautioned to be on the alert to detect any mild case of scarlet fever that might occur.

Exclusion of contacts.—The exclusion of contacts in households where cases of communicable diseases have occurred and are under treatment have already been considered, but in this connection it is necessary to give the procedure followed where a case is found in a schoolroom. When a pupil in a classroom is found suffering with measles, mumps, whooping cough, chicken pox, or German measles, all the other children in that room, susceptible to the disease, are termed "contacts" and are excluded from school in the following manner:

Disease.	Length of time permitted to attend school after date of exposure.	Period of exclusion from school.
Measles	One week	Ten days.
Whooping cough	do	Two weeks.
Mumps	Two weeks	One week.
Chicken-pox	Ten days	Do.
German measles	Two weeks	Do.

When a pupil is found sick with diphtheria or scarlet fever in a schoolroom and the exposure is sufficient to warrant it the pupils in the room are dismissed and the room is disinfected.

A study of the procedure followed in the diseases enumerated above shows that the pupils exposed to possible infection are allowed to remain at school so long as is deemed absolutely safe and are then excluded for a period covering that during which the child would develop the disease in event infection had been contracted.

This plan of exclusion is a safe one, but the question arises whether it is necessary, especially when the exposure has been slight and in view of the fact that both a health officer and a nurse make daily visits to the school and could examine all these susceptible contacts before they were allowed to go to their classroom. Furthermore, if the occurrence of contact cases in C quarantine (6.17 per cent) is taken for comparative purposes, it is easy to surmise that the occurrence of secondary cases, where the exposure has been for such a short period, will be rare, rather the exception than the rule, and these could be detected by the health officer and any spread of infection prevented. Children absent from school for two or more consecutive days are not allowed in the classroom until inspected by the health officer, and every pupil suspected of having a communicable disease is sent to the consultation room by the teacher or nurse for inspection and this procedure is followed daily. In the majority of such instances, therefore, the time of exposure from contact with such a case would be short.

This exclusion causes much dissatisfaction among the parents and in some instances among the teachers, and it is believed that the friction could be obviated, the child allowed to continue at school, and a satisfactory control of possible infection effected by a daily inspection of these contacts by the health officer during the period when they would at present be excluded from school. The pupils should immediately be sent to the consultation room and wait for inspection before being allowed to enter classrooms or mingle with other children. An exception to the procedure suggested might be made in cases of measles, especially if the history of the case showed that the pupil had been attending school for one or more days during the catarrhal stage of the disease and that there had been intimate contact with other pupils in the classroom during this period.

The department has taken such an important step in its classification of quarantines, mitigating the detention of contacts and breadwinners, that its progressive policy should be further extended and consideration given to this subject of exclusion.

Duties of school health officers.—In addition to the general inspection given at the commencement of the school term and the session after the holidays, the health officer is required to visit all the schools in his district daily, reaching the first school at 9.15 a. m. and finishing his work at the last school at 12 noon. He is a part-time employee and is required to give only three hours' service daily.

Health officers must prepare and submit to the division office a schedule of their work, giving the time of their visit at each school in their district. They must also inform the principal of each school of the approximate time at which the school will be visited for the purpose of inspecting for communicable diseases. The schedule is so arranged that the physical examinations and vaccinations are made at the last school visited. When all the physicals are finished in one school, the schedule is changed so that this particular work can be carried out in another school.

Physical examinations.—In so far as possible physicals are made of all pupils in the third, fifth, and seventh grades. This important work is handicapped by the necessity of securing the parent's consent, and varies in the different schools in accordance with the active cooperation of the principals, the intelligence of the parents, and the ability of the field-nurse in convincing the children and their parents that there is no exposure of the person and that it is of vital importance to determine if there is any defect that impairs the child's health and progress in studies. Much also depends upon the personality of the health officer in securing the cooperation of the principal and teachers.

The number of physical examinations varies from practically none in some of the parochial schools to 75 per cent in some of the public schools. At present these examinations are made on only about one-half of the children in attendance, but steady progress is being made and each year shows an improvement; this is especially true in parochial schools as in many of them there has developed a spirit of cooperation.

It is the duty of the field nurse to distribute the parents' consent cards to the pupils in advance of the date set for the commencement of physicals, and to endeavor to have as many signed as possible. No physical examination of a pupil is made unless the parents give their consent by signing the card.

The health officer is required to make 50 physical examinations a week, except when busy with vaccinations or culturing the pupils of a room. A record card is prepared for each pupil upon whom a physical is made and the following data are filled in: Name, age at examination, age at starting school, years in school, height, weight, and notation of any disease or defect found. Upon subsequent examinations all pertinent data are added. These cards are filed alphabetically in a cabinet kept at the school. When the examination shows marked defects or serious diseases and a more thorough examination is deemed necessary, the consent of the parents must be secured for a special examination.

When the diseased conditions present are of sufficient gravity to require treatment, the health officer issues a card to the parents stating that the child is in need of medical attention and should be taken to the family physician or a dispensary for this purpose, and with this notice a card is inclosed for the physician to sign and return when the child has been placed under his treatment, so that the health officer will be properly advised. A duplicate of the card sent to the parent is given the nurse.

Vaccination.—At the beginning of the fall term parents' consent cards are distributed, and commencing October 15 the health officer begins the vaccination of all children for whom consent cards have been procured. All such cards are sent to the department and all refusal cards are dated and filed alphabetically in the cabinet at the school. These children are vaccinated whenever smallpox is sufficiently prevalent to make general vaccination advisable.

Reports.—The health officer sends to the bureau in the first morning mail a report of all the work performed by him during the preceding day. This embraces all examinations made, number of physicals, vaccinations, diseases found and excluded, including all pertinent data in exclusion cases. This will also include the schools visited and the time spent at each.

Consultation day.—The health officers of a designated group of schools meet once a month for the purpose of considering the more complex and serious cases. The supervisors of the section, the field nurses, and, if possible, the teachers and parents also attend. At these meetings special methods of procedure and the general scope of the work are discussed.

Supervising health officers.—These employees are part-time and are required to be on duty the same number of hours as specified for health officers. They exercise general supervision over the work of the health officers and the field nurses; investigate complaints of inefficiency and neglect of duty on the part of employees of the division; arrange meetings with principals and teachers and take up for consideration the activities of the health department in relation to school work; endeavor to secure cooperation for the inspection and physical examination of children in certain schools in which the health officer has failed to obtain satisfactory results; and perform any special investigations assigned by the chief of the division.

DENTAL SERVICE AND DENTAL DISPENSARIES.

In recent years the benefits of the medical inspection of school children have been supplemented by the creation of a dental service and the establishment of 10 dental dispensaries where indigent children can secure free treatment. Formerly the inspection for dental defects was made by a volunteer corps of dentists, but when the parents' consent card was made a necessary preliminary, that procedure was no longer feasible, and such inspections are now made by the health officer in connection with the regular physical examinations.

When carious teeth in urgent need of treatment are found, the regular notice card is sent to the parents and a duplicate furnished the nurse. If the parents request that the child be treated at one of the school dental dispensaries, the nurse visits the home and ascertains whether the parents are able to pay, and if so the child is not granted treatment at the dispensary. In other cases a proper card is made out and the nurse arranges an appointment with the surgeon in charge of the nearest dental dispensary. She takes the children to the dispensary and assists the dentist in his work. When the group is finished, she escorts the children to their school. Little difficulty is experienced in securing parents' consent for dental treatments, and the service has to be safeguarded against abuse. Even in caring for indigent cases there is sufficient work to keep more than double the present number of dispensaries fully occupied.

Supervising dentist.—The general duties of this employee duplicate those of other supervisors in relation to the particular activity in their province. He supervises the work of the dental surgeons, the condition of the dispensaries, gives instruction to employees entering the service, and makes such investigations and regular reports as are required of supervisors. He is part-time, being on duty from 9.15 a. m. to 12 noon.

Dental surgeons.—There are 10 dental surgeons employed in the service, each in charge of one of the dispensaries, which are located in school buildings in different sections of the city. These employees are full-time, and are on duty from 9 to 12 a. m. and 12.30 to 3.30 p. m. on every day the schools are open during the school year.

They receive for treatment the children referred to them by the health officers, and as the work progresses they fill out a dispensary record in triplicate for each child. On completion of the work the original is transmitted to the health department, the duplicate returned with the inspection slip to the school from which the patient was received, and the triplicate filed in the dispensary.

Other duties are the custody and care of property and materials, reports of contagious diseases or serious physical defects that come under their observation in their school clinics, and the forwarding of the required reports.

NURSING SERVICE.

Superintendent of nurses.—The nursing service is under the direction of a superintendent of nurses, who is empowered, subject to the approval of the division chief, with the necessary authority over the field nursing force to carry out such procedures as are essential for the proper performance of the work. She assigns the field nurses to such districts or special work as is deemed best, but in cases of radical departure from established usages or general plans of assignment the approval of the chief of the division must be secured.

Other duties of the superintendent are the arrangement for lectures and demonstrations pertaining to nursing and social welfare work, investigation and recommendations for improving the efficiency of the work, and the preparation of the required records and reports.

Supervising field nurses.—There are 5 of these employers, each in charge of a district that embraces the activities of 20 or more field nurses. These supervisors are required to visit one or more schools each day and devote as much time to the work as is required of the field nurse under their supervision. They check up the efficiency of the nurses, investigate reasons for lack of cooperation of the nurse, health officer, and principal, and endeavor to secure cooperation of the parochial schools. They also furnish instructions to nurses recently entering the service and review the schedule of work submitted by field nurses and see that it corresponds to that of the health officer in a way to conserve the nurses' time to the best advantage.

Field nurses.—One hundred and five field nurses are employed, of whom 99 are assigned to school health officers' districts for work in connection with the schools, 2 to infant welfare stations, and 5 are engaged on special assignments and relief work.

The nurses submit a schedule of their work, which must be approved by the supervisors and the superintendent. The hours of work in the different schools in their district are so arranged that the nurses will be present to assist the health officers in physical examinations, vaccinations, and inspections, and they are required to make an inspection of all the children in schools assigned to them once in three months.

They furnish emergency dressings for cuts, burns, and abrasions, and treat minor contagious skin diseases, as favus, ringworm, scabies, and impetigo. They also apply proper treatment for pediculosis.

One of the important duties of the nurse is to follow up cases in which treatment has been advised for remedying serious defects and the parents have been urged to have the family physician institute treatment. When a physician can not be employed and consent is gained for having the child taken to a dispensary, the nurse accompanies the child. After regular school hours each day and on Saturday forenoons, the time not reserved for instructions and demonstrations is utilized for following up in the homes the care received by children under treatment.

Another duty of the field nurse is to investigate cases of absence from school, in which the history justifies the suspicion of a communicable disease. When a suspected case of measles is excluded from school, the nurse visits the home the same day and instructs the parents to isolate the child; a second visit is made in three days, and if the case has sufficiently developed to warrant it, a report is made to the bureau of a suspected case of measles.

INFANT WELFARE SERVICE.

The city of Chicago is distinctly backward in providing adequate funds for this important activity and most of the work accomplished is performed through the agency of the infant welfare society and by funds contributed by public-spirited citizens.

The plan of work carried out may be outlined as follows:

- A. Health department:
  - 1. Prevention—Finding the babies and advising mothers in the proper care to be exercised to keep the baby well.
- B. Other agencies—Prevention and remedial:
  - 1. (*a*) Infant welfare society.
  - 2. Remedial—
    - (*a*) County physicians.
    - (*b*) Visiting nurses association.
  - 3. Curative—
    - (*a*) Tents.
    - (*b*) Dispensaries.
    - (*c*) Sanitaria.
    - (*d*) Hospitals.
  - 4. Auxiliary—
    - (*a*) County agents.
    - (*b*) United charities.
    - (*c*) Women's clubs.

Health department.—The infant welfare work which the health department can conduct is small on account of inability to secure appropriations for this purpose. The amount available for this activity in 1914 was only $6,000, and the sum appropriated for 1915 is only a slight increase—$7,240. The funds available allow only for the operation of four stations in summer and two in winter, although it is now contemplated to maintain three stations throughout the year. At conferences held three afternoons a week, children are examined, changes in condition noted, and instructions given to the parents in the proper dressing and feeding of their infants. The personnel of a station comprises a physician who is on duty during the hours of conference and subject to call to administer treatments in emergency cases, a trained nurse, and a woman attendant. The nurse follows up the children in their homes, and instructs the mother in bathing and clothing the child and in the method of preparing modified milk when this is used in feeding the infant.

During July and August the field nurses employed in connection with schools are assigned to this work. Six substations are created, each in charge of a supervising nurse, and 72 districts are formed, grouped in relation to the substations, and nurses are assigned to each. The ability to place this number of nurses in the field during the hot months when infant welfare work is most urgent, results in a large extension of such activity and is productive of much good. The infant mortality in such districts is 17 per cent less than in those of even better grade but in which infant welfare work is not carried out.

In this general canvass the cases found requiring care and attention are referred mainly to the stations operated by the infant welfare society, the visiting nurses association, or the health department, and those in need of medical attention are referred to the county physicians, dispensaries, or hospitals.

A record card in triplicate is made for each child visited, the original being sent to the department, the duplicate to the nearest station of the infant welfare society, and the third retained by the nurse as her record.

As the majority of cases requiring welfare work occurs among the poor in crowded tenements, with insanitary surroundings, and since the milk supply furnishing the baby's food is also an important factor, it is evident that the health department is the proper agency to carry out this work. It has jurisdiction over the insanitary conditions and the milk supply, and is thereby in a better strategic position to handle welfare work from more than one angle.

The department should be supplied with ample funds to enable it to execute this work satisfactorily, with merely supplemental support from private charities; but a start has been made, and future appropriations may furnish the means for greater activities.

The following statement is given to show what was accomplished by the health department under such limitations during 1914:

New cases investigated (children under 2 years)	22,216
Revisits made	52,089
Cases of sickness found (under 2 years)	1,388
As follows:	
Acute enteritis	245
Chronic enteritis	27
Marasmus	6
Rickets	84
Bronchitis and pneumonia	71
Skin diseases	573
Sore eyes	20
Not classified	362

The following statistics from the health department reports on food for babies may be of interest:

	Healthy.	Sick.	Total.
Breast fed	9,234	447	9,681
Mixed feeding	6,637	586	7,223
Artificial feeding	4,957	355	5,312
Cow's milk, raw	6,349	184	6,533
Cow's milk, pasteurized	2,702	85	2,787

Infant Welfare Society.—Most of the work accomplished in looking after the welfare of infants is performed by the employees of this society. It is a private organization supported by voluntary subscriptions and by its steady growth has reached a stage at which much important work relative to the conservation of the health of children is carried out. The society maintains and operates 21 stations, at which conferences are held twice or three times a week. The aim is to prevent sickness, and only well babies are received; those found sick are reported to the county physician or referred to the dispensaries and hospitals. The mother brings her baby to the station, the child is examined, and instructions are given the mother concerning general hygiene and proper feeding of the child. The nurse attached to the station follows up the case in the home and teaches the mother in all matters pertaining to the daily life of the infant; dress, bathing, fresh air, and preparation of food. The mother is required to report at the station at proper intervals, and the progress of the child is noted.

The principal aim is to prevent sickness and deaths in the infantile population among the poor, but a more remote effect is the education of the mother and older sisters in the proper care of infants. This general educational work of the nurse is of incalculable value to the ignorant mother.

The growth of this organization during a period of four years is shown as follows:

Year.	Number of stations.	Number of nurses.	Number of babies cared for.	Number of visits.
1911	10	10	2,129	16,706
1912	12	12	3,423	35,528
1913	13	13	3,678	41,647
1914	21	23	6,803	[1] 48,572

[1] For first 10 months.

Though considerable work is being done for the welfare of the infants, there is need for more stations, nurses, fresh-air sanatoria, and dispensaries.

Each of the agencies engaged in welfare work has a distinctive label, and when calls have been made at a home it is affixed to the door of the house. This shows that the premises have already been visited by the particular agency and in this way duplication of work, is avoided.

Little mothers' clubs.—Another agency that will have a future bearing on welfare work is the little mothers' clubs, formed in the public schools with members from the sixth, seventh, and eighth grades. Instructions are given one hour a week for twelve weeks by a field nurse. The subjects taught embrace home sanitation, care of the baby in summer, feeding, bathing, and dressing the baby, signs of illness in the baby, and milk modification.

County Physicians.

Although the county physicians are in no way under the control of the health department, the intimate connection between them and certain activities of the bureau of medical inspection necessitates a brief mention. The indigent sick are referred to them for treatment, and in order that their services may be readily available 17 districts have been created, with a county physician stationed in each.

Administration of Bureau.

The bureau of medical inspection is well organized for the different sorts of work performed, and more actual supervision is carried out in this bureau than in any other in the department.

The assistant bureau chiefs have been very wisely intrusted with the general management of their divisions and the direction of the work performed, and they have authority to decide all routine matters.

One of the most important steps taken in increasing the efficiency of the contagious-disease division is the employment of full-time supervisors in checking the work performed by the health and quarantine officers. A study made of the work of all these employees showed that it was promptly and well executed, that this division is keenly alive to its responsibilities, and that it is satisfactorily organized for efficient and thorough work.

The work of the division of child hygiene is to a large extent in a formative stage, but steady progress is shown by a study of past and present results. The work was examined in a number of districts, embracing that of the various activities, and it may be stated that the organization is adequate for the amount of work it is now possible to do. However, when an increase occurs through more active cooperation of the schools, as a result of the educational propaganda, the necessity for full-time supervisors in this division will arise.

Bureau's activities in 1914.

Some of the important activities of the bureau during 1914 are shown below:

Division of contagious diseases:	
Number of cases reported—	
Typhoid fever	1, 181
Smallpox	70
Chicken-pox	3, 735
Measles	4, 391
German measles	341
Scarlet fever	3, 518
Whooping cough	5, 317
Diphtheria	7, 071
Diphtheria carriers	2, 608
Streptococcus sore throat	705
Erysipelas	782
Mumps	2, 459
Rabies	4
Tuberculosis—all forms	10, 009
Ophthalmia neonatorum	30

Division of contagious diseases—Continued.	
Number of cases reported—Continued.	
Cerebrospinal fever	99
Infantile paralysis	53
Pneumonia	6, 422
Quarantine and disinfection:	
Premises placarded	21, 321
Quarantine visits	51, 711
Premises disinfected	11, 502
Rooms disinfected	33, 283
Inspections of contagious diseases	23, 303
Inspections, suspected contagious diseases	10, 189
Throat cultures made	37, 331
Visits for diagnostic cultures	1, 018
Visits for contact cultures	2, 795
Visits for terminal cultures	12, 224
Vaccinations—smallpox	53, 302
Field calls by health officers	50, 072
Division of child hygiene:	
Total visits to schools	81, 299
Pupils inspected (preliminary, 301,547)	987, 056
Contagious disease cases found	53, 099
Pupils excluded from school	13, 777
Pupils examined (physical)	75, 476
Pupils found with defects	45, 176
Pupils advised to seek treatment	35, 425
Pupils examined for dental defects	15, 598
Pupils found with dental defects	13, 586
Total dental treatments given	55, 625
Total fillings	21, 905
Crown and bridge work	19
Extractions	19, 823
Work of field nurses:	
Total school visits	55, 214
Total inspections and reinspections of school children	696, 739
Total cases of contagious diseases found	6, 132
Number of suspects referred to department	2, 336
Number of routine inspections made	303, 567
Total school dressings	242, 892
Total emergency dressings	32, 702
Total children referred for treatment	76, 867
Total home treatments	1, 809
Total pupils taken for treatment to dispensaries, etc	21, 943
Total calls for instruction on physical defects	78, 028
Total calls other than teeth and fitting of eyeglasses	1, 278
Total pupils' eyeglasses fitted	1, 826
Total field calls	95, 175

[This article will be continued in a subsequent issue.]